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Byzantine Coinage as Source Material¹

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I

NUMISMATICS, as an auxiliary science to history, presents itself under two fairly distinct aspects. There is, on the one hand, the study of coins, which roughly speaking covers those topics that interest the collector as well as the scholar. These are the identification, classification, and description of individual coins, their attribution to specific rulers, dates, and mints, the elucidation of their types and inscriptions, and the ascertainment of their denominations. There is, on the other hand, the study of coinage, or coins in bulk: where, when, and how coins were struck and in what quantity, over what area they circulated, the role which they played in economic life. The two aspects of course overlap, as in the study of mints and chronology, and both are of legitimate interest to the historian, but in many branches of numismatics the tendency in recent years has been to take coins for granted and to study coinage.

This shift of interest, so far as Byzantine coins are concerned, is to some extent premature.² The study of coinage, in a field where documentary evidence is conspicuous by its extreme inadequacy, requires as a necessary preliminary a comprehensive and detailed study of the coins, and there are many periods of Byzantine history for which these are still very insufficiently known. Much important research continues to be carried out on them, and if space were available a survey of the present state of Byzantine numismatics would have to take account of recent work on both coins and coinage. But space is not available, and it may be more profitable here to describe and offer a critical assessment of progress, real or supposed, in the field of coinage, relegating the more traditional aspects of numismatic research to a bibliographical appendix covering the work of the last decade in Byzantine numismatics. Though this is far from complete — many minor notes and articles, and in particular the occasional publication of Byzantine coins in excavation reports, have had to be omitted — it will give a general picture of the range and nature of the work which is being done and should serve as a useful tool for the historian.

¹ Full references to the works cited in the footnotes will be found in the bibliography at the end of this paper. Recent surveys include Bertelé, 'Lineamenti principali della numismatica bizantina', which is a marvel of compression and lucidity, and Grierson, 'Coinage and money in the Byzantine Empire 498–c. 1090', which covers less ground and is concerned with coinage rather than with coins. Metcalf's bibliographical survey, 'The Byzantine Empire', produced for the International Numismatic Congress at Rome in 1961, was severely criticized by Laurent but provides a comprehensive and critical guide to the publications of the 1950's.

² For the purpose of this paper the term 'Byzantine numismatics' is taken to cover coinage from the reign of Anastasius I onwards, in accordance with the practice of the British Museum. It does not deal with the coinage of the eastern half of the Empire in the fifth century, which is treated as Byzantine in the manuals of Sabatier, Tolstoi, and Goodacre.

II

The questions of where and when coins were made are of greater interest to the general historian than are problems of minting technique. Little work has indeed been done on the latter, though we are now in a position to say that a supposed Byzantine pincer-die in the Fogg Art Museum is really a boullotirion and that dies were occasionally modified — e.g. by the alteration of imperial effigies or the addition of officina letters — before being brought into use. Apart from a few specific studies re-attributing single coins or whole groups from one reign to another, there has also been little recent work in the field of chronology. A detailed study of dies and punches may eventually make possible a precise dating of the many undated series, but this type of research, which has been carried out with marked success in the field of medieval English numismatics, has as yet hardly begun in that of Byzantium. On the other hand, a good deal of effort has been devoted to mint identification, and though the results are often highly speculative this field is clearly one in which progress is likely in the immediate future.

The problem of mint identification, in the context of Byzantine coinage, may be briefly stated. During the fourth century A.D. the practice of identifying the mints where coins were struck became usual in the Empire. The identification was normally made by placing a shortened form of the place-name, RM for Roma, CON for Constantinopolis, and so on, somewhere on the reverse. This practice continued, during the sixth and much of the seventh centuries, for the characteristic copper coinage created by the reform of Anastasius I (498). It was neither universal nor foolproof, however; mint-marks are often omitted on the lower denominations and sometimes on the higher ones, while a few — e.g. CON on one series of decanummia struck by Justinian in North Africa — are quite misleading. The marks on the gold (CONOB) and silver coins (usually COB or CONOS), which ought to imply Constantinople, can also not be interpreted literally; they certainly cover coins struck at other mints like Carthage and Ravenna. In the eighth century the use of mint-marks disappeared, lingering longest in the west. The use of CONOB on gold coinage in the east ceased under Artavasdus.

It is on the face of it unlikely that all the coinage of the empire from the ninth century onwards was struck at a single mint, that of the capital, and it is clear that despite the general use of mint-marks in the earlier period there are a number of difficulties and ambiguities that need to be resolved. Mint identification involves two separate processes: (1) that of distinguishing between groups of coins struck at different mints, and (2) that of identifying the mints themselves. The normal way of attacking the first problem is by the use of (a) stylistic criteria, (b) die relationships, (c) localization by find-spots, and (d) iconographic considerations. The first of these allows the grouping together of coins struck by dies likely to have been made by the same die-sinker or by a number of die-sinkers trained together and producing work highly uniform in style. The second depends on the fact that upper and lower dies are separate instruments and that the same obverse die will usually have been used with several different reverse dies and vice versa. Where the study of die linkages can be applied — rather rarely in copper, where the number of dies will be huge and the coins are often so worn that die identification is hazardous — it permits grouping on a much more objective basis than stylistic criteria can provide, for die-life was normally very short and in most cases it can be assumed that die-linked coins were struck in the same mint at about the same time. The third criterion should show

where grouping is geographical in character and indicate where coins are likely to have been struck. The fourth can only rarely be applied in Byzantine numismatics, but may sometimes indicate the presence of mints at places where particular saints were venerated, e.g. St Demetrius at Thessalonica and St Tryphon at Nicaea. Other criteria can occasionally be used — e.g. a study of trace elements may show that the metal used at widely separated mints came from different sources — but in the main the numismatist relies on the methods outlined above.

The systematic study of late Byzantine coinage from the point of view of mint allocation has as yet scarcely begun, though most students of Comnenid and Paleologid numismatics have admitted the probable existence of one or more provincial mints. The most active writer on the subject is Dr D. M. Metcalf, who has studied in detail the reformed folles of Theophilus and the hyperpera of Alexius I with a view to mint identification¹ and has also made a number of suggestions regarding mints in other series.² Theophilus's folles, for example, he has broken down stylistically into seven groups, with provisional mint attributions to Constantinople, the metropolitan region of Asia Minor (two mints?), Thessalonica, possibly northern Greece, and central or southern Greece (two mints?). The hyperpera he has broken down into four main groups with provisional attributions to Constantinople, Nicaea, Thebes or Corinth, and Trebizond, though the detailed attributions are admitted to be quite hypothetical in character. The breakdown of the folles is based on stylistic criteria, the localization on the evidence of find-spots. For the hyperpera the suggested stylistic groupings are in a few cases supported by the evidence of die-links, as they are in one case amongst the folles.

Though these studies have performed a service in calling attention to a problem and publishing material which will help towards its solution, much of the work involved is open to the criticism that its author is too ready to equate stylistic groupings with separate mints. Stylistic uniformity is not necessarily characteristic of mint activity; sometimes one die-sinker may work for several mints, at others several die-sinkers with markedly different styles will have worked simultaneously in a single mint. Dr A. I. Dikigoropoulos, who has studied the folles of Theophilus at Dumbarton Oaks in the light of Dr Metcalf's observations, has informed me that he is unable to see more than three mints at work, and though on general grounds I would expect a number of new mints to have been opened for a recoinage I am not myself convinced that the evidence points to the existence of more than two, one in the capital and a second, of quite distinct rough work, in the provinces. As for the hyperpera of Alexius, they were struck over a period of nearly forty years and many of the stylistic differences may simply result from the coins being widely separated in time. Where coins are dated, stylistic arguments are on much firmer ground. Half-folles of Maurice struck at Constantinople, Nicomedia, and Cyzicus, which are without mint-marks, can be assigned with confidence to their correct mints, since they are all dated and can be compared year by year with the folles — which have mint-marks — of the same mints.³

¹ 'The new bronze coinage of Theophilus' and 'The reformed gold coinage of Alexius'.

² See esp. his *Coinage in the Balkans, 820-1355*, his 'Provincial issues among the Byzantine bronze coinage of the eleventh century', and his 'Byzantine scyphate bronze coinage in Greece'.

³ Cf. L. Schindler, 'Byzantinische Münzstudien: 4. Die halben folles ohne Münzstättenbezeichnung des Mauricius Tiberius', *Numismatische Zeitschrift*, lxxiii (1949), pp. 111-14, who called attention to the problem but lacked the material for its systematic study. An attempt to separate the products of the three mints is made in the first volume of the Dumbarton Oaks catalogue.

The question of whether stylistic differences arise from differences in mint can sometimes be settled by the evidence of fabric, which is less apt to change than is style, and of find-spots, which should show localization where this exists. It is such considerations that allow us to separate the north African solidi of the late sixth and early seventh centuries from those of Byzantium; they are of quite distinct fabric, smaller in diameter and much thicker, and are rarely found outside the province where they were made. But localization may be a matter of date, not of place of mintage, and in any case, for much of the later coinage, the archaeological evidence at present available is insufficient to justify even provisional conclusions. Dr Metcalf's analysis of the hyperpera of Alexius, whose original issue must have run into millions, is based on less than 80 specimens, while that of the folles of Theophilus, which will have run to tens and perhaps hundreds of millions, is based on only just over 100, with find-spots recorded for less than 10.¹ One group is ascribed to Thessalonica on the ground that there are two specimens in the museum of Sofia, one known to have been found in Bulgaria, and that three occurred in the Corinth excavations, while a group of hyperpera of Alexius is attributed to Trebizond very largely on the ground that four specimens were found in Georgia. Though Dr Metcalf's work in Yugoslavia and Greece has greatly increased our knowledge of the find-spots of individual Byzantine coins, it is clear that far more evidence, both positive and negative, is necessary before one can attempt systematic localization of striking.² As Professor Gerasimov has pointed out in connexion with the fractional coinage of the Comnenid period, it is not enough to say that a coin is common in the Peloponnese unless one is also in a position to say that it is rare or, better still, not found at all, in Asia Minor or Bulgaria or other provinces of the empire.³

That it will eventually be possible to do much more in the way of mint identification one cannot doubt, but in the meantime the impulse to multiply mints unnecessarily should be held in check. The evidence of the late Roman Empire does not suggest that there need have been many mints for the gold: I would myself have doubted whether more than two, Constantinople and Thessalonica, are likely in the twelfth century, and normally there may have been only one. Fractional coinage is more likely to have been struck at several mints, particularly — as with the coinage of Theophilus — when a general recoinage was under way, for the opening of local mints would greatly simplify the recall of old coin and the issue of new. But these need not have been more than temporary; under normal conditions they would not be needed. If Constantinople, Thessalonica, Cyzicus, and Nicomedia could supply the whole of the Balkan Peninsula and Asia Minor in the sixth century, one would not expect more than Constantinople and Thessalonica for the much reduced empire of the ninth and later centuries. Precise identification of mints is in any case mere guesswork unless there is written or exceptionally clear archaeological evidence for their existence, for mints were not necessarily situated in places of commercial importance. If it were not for mint-marks on the coins, nobody would dream of

¹ Excluding the very numerous ones (c. 150) from the Corinth excavations, which he had not yet studied at the time of writing.

² It must also be said that Metcalf is extremely capricious in his use of find evidence and ignores it when it suits him. E.g. he assigns to Antioch (Theoupolis) and not to Thessalonica a pentanummium of Justin II having Θ as mint-mark, despite the fact that two specimens have been found at Athens and that there was only one (out of 54 of the type) in the Antioch excavations ('The Slavonic threat to Greece', p. 149; his proposal there to assign part of the coinage to Justinian is quite unacceptable).

³ 'Un problème de numismatique byzantine', *XII^e Congrès international des Etudes byzantines, Ochride, 1961: Résumés des communications* (Belgrade-Ochrid, 1961), pp. 35-36.

supposing that Cyzicus and Nicomedia, and not (say) Ephesus and Caesarea, were the locations selected for mints in Asia Minor in the sixth century. In view of this there seems little justification for assuming that mints were situated at, e.g. Corinth or Athens in the Macedonian or later periods.

The importance attached by numismatists to mint identification, in the context of a state like the Byzantine Empire, will in any case appear excessive to the economic historian. Does it really matter, to anyone save the collector, whether English pennies of 1918 and 1919 were struck at the Royal Mint in London or at such provincial mints as those at Birmingham and King's Norton? The historian is rarely interested in mints save where they are exploiting newly mined material or are so placed as to tap imports of metal coming from abroad, or where their products can be linked up with evidence from find-spots in such a way as to throw light on commercial contacts or movements of troops. What really interests the economic historian is mint output in relation to the economic needs of the community.

III

The second half of this requirement is in large measure a matter of definition. Difficult to estimate even in modern times, 'economic needs' are quite impossible to ascertain for remoter ones, when one's knowledge of population figures, of the distribution of coin between the different classes in the community, and of the relative roles of coin and credit in economic life are virtually non-existent. Nor are they a matter on which the numismatist's predispositions are likely to be helpful. He is naturally inclined to assume that an abundance of coin will be useful to commerce without always remembering that this abundance may be a consequence of unchecked inflation and not arise out of the requirements of merchants at all. He is also more interested in highly varied coinages than in uniform ones, though uniformity is more likely to be advantageous to those using the coins and diversity often arises from a multiplication of debased issues. Professor Lopez's comments on the limitations of our knowledge are as valid today as when they were written.¹ But attempts have been made both to compare the total bulk of coinage in circulation at different periods of Byzantine history and to estimate mint output with some degree of precision, and these are worth examination.

The latter problem can conveniently be examined first. Mint output can be calculated if we know the number of dies used for an issue and the average number of coins struck per die. Since no Byzantine mint records have survived the numbers of dies can only be estimated statistically, while such figures as may be proposed for coin output per die have to be based on the assumption that these will have been much the same as those in e.g. late medieval England, for which mint records are available.

Though the formulae employed by different scholars for establishing die totals give rather different results² and vary substantially in the degree of accuracy claimed, the principle behind them can be easily explained. If one has a random sample of

¹ R. S. Lopez, 'The dollar of the middle ages', *Journal of Economic History*, xi (1951), p. 217, n. 20. Cf. the judicious observations of Metcalf, *Coinage in the Balkans*, pp. 10-13, though the population figures he gives are dubious both in themselves and in their relevance to the points at issue.

² For various methods see Metcalf, *Coinage in the Balkans*, pp. 7-10; L. Brunetti, *Aspetti statistici della metanumismatica* (Rome, 1963), and the article cited in the next note; and C. S. S. Lyon, 'The estimation of the number of dies employed in a coinage', *Numismatic Circular*, lxxiii (1965), pp. 180-1.

100 coins from an issue, and all are struck from the same pair of dies, it is highly unlikely that any more dies were used. At the other extreme, if the coins are all struck with different dies, one has no way of estimating the total used, though it must have been vastly in excess of 100. If a proportion of die identities occur it is possible to calculate, within a very large margin of error, what the likely total of dies for the entire issue was. Professor Brunetti, studying the silver coinage of John V during the regency of Anna of Savoy (1341-7), which is known to us from a large hoard very minutely described by Signor Bertelè, estimated the number of obverse dies used for the coinage at about 2,830, and on the assumption that about 1,800 coins were struck per die put the size of the issue at about 5 million coins.¹ Dr Metcalf, using slightly different methods for arriving at the total of dies and on the assumption that about 10,000 coins were struck per die, has suggested that the total figure for Michael II's folles was about 6 million and that for Alexius I's hyperpera about 10 million.² A reckoning of 10,000 coins per die would put up the total of Anna's silver coins to 26 million.

Though these estimates may serve a useful purpose in dispelling the idea of some scholars that medieval mints struck only a few thousand coins a year, they are open to criticism in that they suggest a much higher degree of accuracy than we can really hope to approach. Neither the totals of the dies used nor the average coin output per die can be ascertained as simply as those using these methods seem to suppose.

The differences between the various formulae used for arriving at the total number of dies are not perhaps very important, since such errors as they may involve are eclipsed by others which may occur elsewhere in the calculations. Two of the most serious of these arise out of the assumption that the coins studied are random samples and that die links can be easily identified. The first condition is very unlikely to be fulfilled unless the number of coins available for study is large and comes from a number of different sources; a single hoard will provide such a sample only in very exceptional circumstances. Estimates based on small samples in any case involve a large probability range, and if one attempts to reduce this by increasing the size of the sample a new source of error, arising from the inherent difficulty of die study itself, comes in to complicate the picture. It is a matter in which accuracy is extremely important, since small errors in determining the number of die identities will be lavishly multiplied when the totals come to be calculated. But die comparison becomes progressively more difficult as more coins are involved. Coins, particularly copper coins, are often very worn, and wear can easily make any certainty in identification impossible. Dies have also sometimes been recut or repaired, and such a repaired die, while 'different' from the point of view of the resulting coin and exceedingly difficult to recognize for what it is, will have a much shorter life than a newly fashioned one.

As for the average coin output per die, Brunetti's estimate of an average 1,800 coins is based on such considerations as the relative hardness of the metals involved (iron dies, silver coins) and the relief of the coins, but is certainly too small. Metcalf's figure of 10,000 is based on late medieval English records, but even if one could be certain of its accuracy³ and was prepared to assume that Byzantine dies had the

¹ Brunetti, 'Sulla quantità di monete d'argento emesse sotto Anna di Savoia'.

² *Coinage in the Balkans*, pp. 20, 82-3.

³ The figure has almost become traditional, but other estimates are much higher. Cf. B. H. I. H. Stewart, 'Medieval die-output: two calculations for English mints in the 14th century', *Numismatic Chronicle*, 7th series, iii (1963), pp. 97-106, and a further article, 'Second thoughts on medieval die-output', *ibid.*, 7th series, iv (1964), pp. 293-303. The difficulty in part

same 'life' as English ones — it is not even known whether they were of the same metal — one cannot reasonably take it to be of general application. The die-life for folles of Michael II, 27 mm. in diameter and weighing 7 gm., is scarcely likely to have been the same as that for silver pennies only 17 mm. in diameter and weighing 1.5 g. Further, if we apply the figure of 10,000 to Anna's silver coins — this is reasonable, for they were struck at a date not far removed from the English pennies and were comparable in size — we would, assuming that the remainder of Dr Brunetti's calculations and observations are correct, have a total output of 26 million with only 250 surviving specimens.¹ Such a survival rate is neither likely in itself nor satisfactory as a starting-point for estimates of such magnitude. Before these methods can be applied with any confidence, it is essential that they should be tried out on western material of a more modern period where the total output is known from surviving mint records and can be used to control the figures arrived at by calculation.²

IV

If the precise figures for mint output are unconvincing, however, it may be possible to arrive at comparative estimates. One can obviously neglect such a statement as that in A.D. 630 there was about 20 per cent less gold in circulation than there had been two centuries earlier,³ for this can be nothing more than guesswork, but more serious recent estimates have failed to take account of the complications involved in the material itself. Professor A. P. Kazhdan, in his study of Byzantine towns, attempted to combine the material from published museum collections with that from excavation reports as a basis for comparisons of the volume of coinage in the sixth and seventh centuries.⁴ Professor G. Ostrogorsky criticised his results on the ground that the figures involved the indiscriminate use of gold, silver, and copper coins, and proposed instead to rely simply on the gold in museum collections.⁵ The one method was as misleading as the other. Museum curators are normally interested in procuring specimens of as many different coins as possible, not large numbers of specimens of the same coin, and the proportions in their collections are consequently

arises out of knowing whether the words *cuneus* and *iron* used in the accounts meant upper and lower dies counted separately or combinations of a lower die and one or more upper dies, for the difference may involve multiplying (or dividing) our estimate by two, three, or even four. Output must in any case have been very variable. The stage at which a mint superintendent would decide that a die should be discarded would depend partly on aesthetic considerations, partly on ease and cost of replacement.

¹ Though on general grounds an output of 26 million would not seem unreasonable for the mid-fourteenth century. Metcalf's figure of 6 million folles for Michael II is on the other hand quite inadequate — less than a follis per head of the population on any reckoning of the latter. His total for the coinage of Philippicus (50,000–200,000 coins), if intended to represent the whole output for the empire, can also not be accepted.

² Cf. B. Thordeman, 'The Lohse hoard: a contribution to the methodology of numismatics', *Num. Chron.*, 6th series, viii (1948), pp. 188–204, where the number of coins (dated) in a huge hoard of the mid-eighteenth century can be checked against the known annual figures for mint output. The sampling is extraordinarily accurate, but the conditions were exceptional since (a) the hoard was buried in a place (Stockholm) with an active commercial life, ensuring that the coinage would be well mixed and the chance of a coin of any particular year being picked for hoarding would be proportional to the number of coins of that year in circulation, (b) the place of finding was also that of the mint where the coins were struck, and (c) the hoard was very large indeed (18,000 coins).

³ S. Runciman in the *Cambridge Economic History*, ii (Cambridge, 1952), p. 90.

⁴ 'Vizantiskie goroda v VII–XI vekakh', *Sovetskaya Arkheologiya*, xxi (1954), pp. 164–83, esp. pp. 166 et seq.

⁵ 'Byzantine cities in the early middle ages', *Dumbarton Oaks Papers*, xiii (1961), pp. 45–66.

quite unrelated to original coinage densities.¹ The copper coins they have of the sixth century will far outnumber those of the seventh, since more mints were in operation and the coins were more systematically dated, while for gold coins the proportions will be the other way about, since in the seventh century the types of the solidus were frequently changed and privy marks were employed in great profusion. Any line of reasoning based on museum material is bound to give misleading results.

A better case can be made out for relying on the comparative density of coin finds. These fall, broadly speaking, into two classes, (1) casual finds, whether of single coins or hoards, and (2) excavation or site finds. They are theoretically complementary to each other, for casual finds are our chief guide to the geographical distribution of coinage while site finds, where the area excavated is large enough, allow us to compare the density of coin circulation at different epochs. Evidence regarding the first is in general unsatisfactory for former Byzantine lands. Most finds of single coins are unreported, and only a small proportion of the hoards that are found come intact or with reliable information about provenance into the hands of museum curators or collectors who are capable of undertaking their scientific study. Site finds are much better documented, and in certain cases — Athens, Corinth, Antioch, Sardis — provide a great abundance of material for which no parallels can be found in the archaeology of western Europe.² But excavation material suffers the disadvantage of a strong bias, since it consists mainly of low denominations of fractional coinage, rarely including gold or silver at all, and even where a comparison of excavation material from several sites is possible, this still only consists of material from one particular kind of settlement.

The most notable achievements in this respect have been in the study of the copper coinage of the sixth and early seventh centuries, where the excavation material from Athens, Corinth, and Antioch allows one to trace the gradual disappearance of the lower denominations and the more frequent loss of the higher ones,³ and the decreasing use of coin in such commercial centres as Corinth and Athens in the seventh century.⁴ There has sometimes been a tendency, however, to forget that the contracting use of coin in towns may have been balanced by its

¹ Failure to realize this is particularly evident in Ostrogorsky's article. E.g. the British Museum catalogue contains an average of 1.66 gold coins per year for the period 491–610, 3.76 for the period 610–711. Tolstoy's figures for the same periods work out at 1.87 and 5.89. Ostrogorsky concludes that 'gold issues not only did not diminish in the seventh century, but on the contrary, increased significantly'. No statistical estimate is possible, but it is most unlikely that this was the case. The museum figures are distorted (a) by the existence in the seventh century of many different varieties and (b) by the greater number of seventh century coin hoards resulting from the circumstances of the Persian and Arab invasions. 'Year-count' ratios, though widely used by archaeologists (e.g. J. S. Kirkman for Byzantine coins in J. W. Crowfoot and others, *The objects from Samaria* (London, 1957), pp. 44–8) are in any case pretty meaningless where small numbers are involved.

² The Antioch finds have been published in their entirety (D. B. Waage, 1952), but since the standard publications of H. W. Bell on Sardis (1916), Kathleen Edwards on Corinth (1933), and Margaret Thompson on Athens (1954) further digging has produced great masses of new material only imperfectly summarized in *Hesperia* (1937 and 1941 for Corinth) and the *Bulletin of the American Schools of Oriental Research* (1960 et seq. for Sardis, but without the numbers of coins). Illuminating comparative tables of the proportions of coins from these and other excavations are worked out by Metcalf, 'The currency of Byzantine Coins in Syria and Slavonia', pp. 442–4. Not all the sites are strictly comparable, however, since the prolonged gaps of Byzantine coins in Antioch and the north Balkans was not due to domestic causes but to these localities having ceased to form part of the Byzantine Empire.

³ Grierson, 'Coinage and money in the Byzantine Empire', pp. 436–9.

⁴ P. Charanis, 'The significance of coins as evidence for the history of Athens and Corinth in the seventh and eighth centuries', *Historia*, iv (1955), pp. 163–72.

greater use in the countryside and not be simply a consequence of a fall in the total output of the mints. E. T. Newell, in discussing the coins found in the American excavations of the early 1930's at the Alishar hüyük in Anatolia, commented on the absence of coins of Constans II, though these could be bought in the neighbouring villages.¹ More information about casual finds in the countryside would probably provide a corrective to the exaggerated picture of trends which we obtain from city excavations alone.

The patchy nature of our knowledge of casual finds is likewise a serious limitation to the usefulness of these for a study of coin distribution and the regional circulation of the products of individual mints. Dr Metcalf has applied modern statistical methods to analysing some of the figures we possess, arguing that these show how in the sixth century specific officinae might be charged with the 'consignment' of coins to individual towns or provinces.² Though the notion itself is *prima facie* plausible the analyses of the small numbers of coins involved does not always carry conviction. It is also not clear that local concentrations of particular dates or officinae were necessarily the result of deliberate policy, as the term consignment seems to imply, and not accident.³ Apparent anomalies in coin distribution may also disappear on examination. Professor A. R. Bellinger has commented on the presence of substantial numbers of certain types of Manuel I in the excavation material from Corinth and the complete absence of some of them and the rarity of others at Athens.⁴ The coins in question, however, are scyphate issues, not flat copper ones, and scyphate coins were technically billon and as a higher denomination of fractional coinage are normally found in hoards, not scattered loose in excavation finds. We have probably, in fact, to do with a dispersed hoard, and the coin proportions from the two excavations are not in this respect properly comparable with each other.

Coins found beyond the imperial frontiers are in a slightly different category from those found inside them. They are in many cases better recorded,⁵ if only as a result of their occurring in an unexpected context, and though in general the number involved is small their significance is often very great. Good bibliographies of coin finds in the Soviet Union, Scandinavia, Czechoslovakia, Rumania, and other countries have recently been published, and even where full lists are not available there is much material in the publications of archaeological and numismatic societies. The interpretation of these finds is not always easy. Many of the coins no doubt left the Empire as a result of trade, and scholars have used their find spots to trace commercial routes, but other possibilities — tribute, gifts, ransoms, and the like — obviously exist.⁶ The influence of Byzantine coin types abroad is also of interest to the historian, but once again economic explanations should not be too

¹ H. H. Von der Osten, *The Alishar Hüyük. Seasons of 1930-32. Part III* (Chicago, 1937), pp. 317-8. Newell suggests that the town perished in the Persian invasion. The decline in the volume of coinage at Athens comes only after the reign of Constans II.

² See esp. his 'Organization of the Constantinople mint for the folles of the Anastasian reforms', but he has applied the same methods in his study of the Anonymous Bronze and elsewhere.

³ E.g. troop movements, or the element of chance in the allocation of rolls or sacks of coin in the mint to particular consignees. If such rolls were made up by officinae, as mint convenience would probably require, a particular locality might well receive, in any one year, a high proportion of coins having the same officina mark.

⁴ 'Three hoards of Byzantine bronze coins', pp. 165-7.

⁵ This is not true of the provinces lost to Islam, where the evidence of coin finds is usually as unsatisfactory as it is for Asia Minor and Greece.

⁶ Cf. P. Grierson, 'Commerce in the Dark Ages: a critique of the evidence', *Trans. of the Royal Historical Society*, 5th series, ix (1959), pp. 123-40.

readily assumed. That one of Edward the Confessor's coin types is copied from the seated Constantinopolis of the solidus of Justin II can only be ascribed to chance, and the traditional explanation for the copying of Byzantine coin types in mid-eleventh-century Denmark is Harold Hardrada's treasure-laden return from Varangian service at Constantinople in the early 1040's. Though this interpretation has been challenged in recent years by several specialists in Scandinavian numismatics I have myself little doubt that it is substantially correct.

Despite many difficulties and anomalies, however, it is clear that the analysis and interpretation of coin finds is one of the most promising lines of advance in Byzantine numismatics. The chief danger at present is that of premature generalization. Non-specialists, according to their temperament or their prejudices, are disposed to approach the work of numismatists, whose conclusions they often lack the technical competence to assess, with either undue credulity or undue scepticism. If the numismatist overplays his hand, either through lack of judgement, an insufficiency of background knowledge, or what an economist has unkindly described as 'sophisticated guesswork masquerading under bogus statistics', he may do a serious disservice to his subject. Hypothesis has a legitimate place in science and it is pleasanter to generalize and interpret than to describe, but in some important fields of Byzantine numismatics we have at present not enough evidence to arrive at useful conclusions.

SELECT BIBLIOGRAPHY, 1956-65

The list that follows indicates the chief lines of research, and though it is not exhaustive it is hoped that nothing of importance has been missed. The first section includes works which cannot be conveniently fitted into the chronological framework of Sections II-VII. Where a work covers two of these sections it is generally placed in the first of them; the list is not so long that this should cause difficulty. Explanatory notes are added where the contents are not clear from the title.

Abbreviations

<i>Annali</i>	Annali dell'Istituto italiano di Numismatica
<i>B.Z.</i>	Byzantinische Zeitschrift
<i>Congresso 1961</i>	Congresso internazionale di Numismatica, Roma, 1961
<i>D.O. Papers</i>	Dumbarton Oaks Papers
<i>H.B.N.</i>	Hamburger Beiträge zur Numismatik
<i>M.N.</i>	Museum Notes (American Numismatic Society)
<i>N.C.</i>	Numismatic Chronicle
<i>N. Circ.</i>	Numismatic Circular
<i>N.N.M.</i>	Numismatic Notes and Monographs
<i>N.Z.</i>	Numismatische Zeitschrift
<i>R.B.N.</i>	Revue belge de numismatique
<i>R.I.N.</i>	Rivista italiana di numismatica
<i>R.N.</i>	Revue numismatique
<i>S.C.N.</i>	Studii și cercetări de numismatică
<i>V.V.</i>	Vizantiiskii Vremennik

I. GENERAL

- Bellinger, A. R. 'The coins and Byzantine imperial policy', *Speculum*, xxxi (1956), pp. 70-81.
- Bellinger, A. R. 'Roman and Byzantine medallions in the Dumbarton Oaks Collection', *D.O. Papers*, xii (1958), pp. 125-56.
- Bellinger, A. R. *Troy. The coins* (Princeton, 1961).
- Bertellè, T. 'Lineamenti principali della numismatica bizantina', *R.I.N.*, lxvi (1964), pp. 33-118.
- Boon, G. C. 'A note on the Byzantine bronze coins said to have been found at Caerwent', *Bull. of the Board of Celtic Studies*, xvii (1958), pp. 316-9. [Probably represent modern losses.]
- Cončev, D. 'Kolektivni nachodki na moneti', *Godishnik na Narodniya Arkheologicheski Muzei, Plovdiv*, iv (1960), pp. 206-15. [List of hoards found since 1909.]
- Cox, D. H. *Coins from the excavations at Curium, 1932-1953 (N.N.M., no. 145; New York, 1959).*
- Dimian, I. 'Citeva descoperiri monetare bizantine pe teritoriul R.P.R.', *S.C.N.*, i (1957), pp. 189-216. [Register of finds from Rumania. Indispensable.]
- Dürr, N. *Catalogue des poids byzantins. (Musée d'art et d'histoire de Genève.)* [Geneva, 1964.] (Reprint of article in *Genava*, xii, 1964.)
- Galavaris, G. P. 'The symbolism of the imperial costume as displayed on Byzantine coins', *M.N.*, viii (1958), pp. 99-117.
- Gerasimov, T. 'Die Numismatik in Bulgarien', in V. Beševliev and J. Irmscher, *Antike und Mittelalter in Bulgarien* (= *Berliner Byzantinische Arbeiten*, xxi; Berlin, 1960), pp. 146-57.
- Gerasimov, T. 'Trésors de monnaies découvertes en Bulgarie au cours de l'année 1955', *Bull. de l'Institut d'Archéologie*, xxi (Sofia, 1957), pp. 323-27. (Similarly for later years in subsequent vols.)
- Göbl, R. 'Die byzantinischen Münzen in der Sammlung der Mechitharisten-Congregation in Wien', *N.Z.*, lxxix (1961), pp. 10-27.
- Goodacre, H. A *handbook of the coinage of the Byzantine Empire* (2nd ed. London, 1957).
- Grierson, P. 'Coinage and money in the Byzantine Empire, 498-c. 1090', in *Moneta e scambi nell'alto medioevo* (Spoleto, 1961), pp. 411-53.
- Grierson, P. 'Monete bizantine in Italia dal VII al XI secolo', in *Moneta e scambi nell'alto medioevo* (Spoleto, 1961), pp. 35-55, with discussion on pp. 123-63.
- Hatz, G. 'Münzfunde aus Haithabu 1962', *Offa*, xxi-xxii (1965), pp. 74-9. [Byzantine finds from the region listed, pp. 77-78.]
- Kropotkin, V. V. *Klady vizantiiskikh monet na territorii SSSR* (Moscow, 1962). [Indispensable guide.]
- Kropotkin, V. V. 'Novye nakhodki vizantiiskikh monet na territorii SSSR', *V.V.*, 2nd series, xxvi (1965), pp. 166-89.
- Lhotka, J. F. *Introduction to East Roman coinage*, n.p., n.d. [Consolidated reprint of articles in *The Numismatist*, 1954-5. For collectors; often useful.]
- Lishev, S. *Za promikvaneto i rolyata na parite vŭv feodalna Bŭlgariya* (Sofia, 1958).
- Longuet, H. *Introduction à la numismatique byzantine* (London, 1961).
- Longuet, H. 'Die unedierten byzantinischen Münzen des Wiener Kabinettes', *N.Z.*, lxxvii (1957), pp. 28-57.
- Mashev, S. 'O nekotorykh voprosakh, svyazannykh s vizantiiskimi pamyatnymi monetami', *V.V.*, 2nd series, xviii (1961), pp. 236-53. [Resolves some difficult coin inscriptions and discusses the ranking of emperors on the coins.]
- Metcalf, D. M. 'The Byzantine Empire', *Congresso 1961*, i: *Relazioni* (Rome, 1961), pp. 233-45. [Bibliographical survey of recent work.]
- Metcalf, D. M. *Coinage in the Balkans, 820-1355* (Thessalonica, 1965).
- Metcalf, D. M. 'The coinage of Thessaloniki, 820-1204, and its place in Balkan monetary history', *Balkan Studies*, iv (1963), pp. 277-88.
- Metcalf, D. M. 'The currency of Byzantine coins in Syrmia and Slavonia', *H.B.N.*, xiv (1960), pp. 429-44.
- Mushegyan, Kh. A. *Deneshnoe obrashchenie Dvina po numizmaticheskim dannym* (Erivan, 1962). [Includes important Byzantine material.]
- Nohejlová-Pratová, E. *Nálezky mincí v Čechách, na Moravě a ve Slezsku* (4 vols. Prague,

1955-8). [The Byzantine coins found in Bohemia, Moravia, and Silesia are listed in vol. i, but the index is in vol. iv.]

Ondrouch, V. *Nálezky keltských, antických a byzantských mincí na Slovensku* (Bratislava, 1964). [Byzantine coins found in Slovakia listed on pp. 167-71.]

Perantoni Satta, G. 'Rinvenimenti in Sardegna di monete dell'Impero d'Oriente', *Annali*, iii (1956), pp. 151-66.

Procopio, G. 'Reggio Calabria — Museo Nazionale', *Annali*, v-vi (1958-9), 278-84. [Includes a list of Byzantine coins, recently acquired, with precise find spots.]

Rasmusson, N. L., Holst, H., and Rosenstock, L. H. 'Byzantiska mynt', in *Kulturhistorisk Leksikon for nordisk middelalder*, ii (Copenhagen, 1957), coll. 428-31. [Byzantine coins found in Scandinavia.]

Sokolova, I. V. 'Klady vizantiiskikh monet kak istochnik dlya istorii Vizantii VIII-XI vv.', *VV*, 2nd series, xv (1959), pp. 50-63.

Suhle, A. 'Der byzantinische Einfluss auf die Münzen Mitteleuropas vom 10. bis 12. Jahrhundert', in *Aus der byzantinischen Arbeit der Deutschen Demokratischen Republik*, ed. J. Irmischer, ii (= *Berliner Byzantinische Arbeiten*, vi; Berlin, 1957), pp. 282-92.

Whitting, P. D. 'The Byzantine Empire and the coinage of the Anglo-Saxons', in *Anglo-Saxon coins: studies presented to F. M. Stenton*, ed. R. H. M. Dolley (London, 1961), pp. 23-38.

II. ANASTASIOS I — MAURICE (491-602)

Adelson, H. L. 'Early medieval trade routes', *Amer. Hist. Rev.*, lxxv (1960), pp. 271-87. [Evidence of light weight solidi.]

Adelson, H. L. *Light weight solidi and Byzantine trade during the sixth and seventh centuries* (*N.N.M.*, no. 138; New York, 1957).

Adelson, H. L. 'A note on the miliarensis from Constantine to Heraclius', *M.N.*, vii (1957), pp. 123-35.

Adelson, H. L. 'Silver currency and values in the early Byzantine Empire', *Centennial Publication of the American Numismatic Society*, ed. H. Ingholt (New York, 1958), pp. 1-26.

Adelson, H. L., and Kustas, G. L. 'A sixth century hoard of minimi from the western Peloponnese', *M.N.*, xi (1964), pp. 159-205.

Avi-Yonah, M. 'The economics of Byzantine Palestine', *Israel Exploration Journal*, viii (1958), pp. 39-51.

Colt, H. D. (ed.) *Excavations at Nessana (Auja Hafir, Palestine)*. Vol. i. London, 1962. [Byzantine coins of the sixth-seventh centuries listed by A. R. Bellinger on pp. 70-6.]

Crowfoot, J. W., Crowfoot, G. M., and Kenyon, K. M. *The objects from Samaria* (London, Palestine Exploration Fund, 1957). [Coins, incl. 40 Byzantine ones of the sixth-seventh centuries, described by J. S. Kirkman.]

Dodd, E. C. *Byzantine silver stamps*. (Washington, 1961.)

Fagerlie, J. 'Contact between Italy and the Baltic in the 5th and 6th centuries A.D.', *Congresso 1961*: ii, *Atti* (Rome, 1965), pp. 411-20.

Gamberini, C. 'Un rovescio sconosciuto su di un inedito follaro di Anastasio I per Costantinopoli', *Italia Numismatica*, xv (1964), p. 142. [There is another specimen at Berlin of this hitherto unknown coin.]

Grierson, P. 'Coins monétaires et officines à l'époque du Bas-Empire', *Schweizer Münzblätter*, xi (1961), pp. 1-8.

Grierson, P. 'The date of the Dumbarton Oaks Epiphany medallion', *D.O. Papers*, xv (1961), pp. 221-4. [Probably 584.]

Grierson, P. 'Matasuntha or Mastinas? A reattribution', *N.C.*, 6th series, xix (1959), pp. 119-30.

Grierson, P. 'Una moneta d'argento inedita di Teoderico il Grande', *Numismatica*, 2nd series, i (1960), pp. 113-5.

Grierson, P. 'The *Tablettes Albertini* and the value of the solidus in the fifth and sixth centuries A.D.', *Journal of Roman Studies*, xlix (1959), pp. 73-80.

Grierson, P. 'Trace elements in Byzantine copper coins of the 6th and 7th centuries', *Dona Numismatica Walter Hävernack zum 23. Januar 1965 dargebracht* (Hamburg, 1965), pp. 29-35.

Hsia Nai, 'A Byzantine gold coin discovered from a Sui dynasty tomb near Sian, Shensi', in his *Studies in Chinese archeology* (Peking, 1961), 135-42; English résumé on pp. 172-3. [Solidus of Justin II and imitation solidus of Heraclius. Also publ. in *V.V.*, 2nd series, xxi (1962), pp. 178-82.]

Jurukova, J. 'L'activité de l'atelier monétaire de Carthage et la circulation de monnaies carthagoises dans les terres bulgares au VI^e siècle', *Arkheologiya*, vi (Sofia, 1964), pp. 7-9.

Kent, J. P. C. 'The Antiochene coinage of Tiberius Constantine and Maurice, 578-602', *N.C.*, 6th series, xix (1959), pp. 99-103.

Keramittiev, A. 'Un grand dépôt des monnaies du commencement de l'époque byzantine trouvé à Seltze, arr. de Prilep', *Zbornik, Arheološki Muzej, Skopje*, iii (1959-60), pp. 53-64. [Mid sixth century hoard.]

Kricheldorf, H. 'Eine Ganzsiliqua Theoderichs', *Schweizer Münzblätter*, viii (1958), pp. 25-27.

Küthmann, C. 'Beiträge zur byzantinischen Münzkunde', *Revue suisse de numismatique*, xxxix (1958-9), pp. 49-58. [Notes on two coins of Justinian and Heraclius.]

Lafaurie, J. 'Un solidus inédit de Justinien Ier frappé en Afrique', *R.N.*, 6th series, iv (1962), pp. 167-86.

Lafaurie, J. 'Trésor de monnaies de cuivre trouvé à Sidi Aïch (Tunisie)', *R.N.*, 6th series, ii (1959-60), pp. 113-230. [Minimi of the sixth century.]

Lallemand, J. 'Sous d'or byzantins de poids faible au Cabinet des Médailles de Bruxelles', *Dona Numismatica Walter Hävernich zum 23. Januar 1965 dargebracht* (Hamburg, 1965), pp. 37-41.

Leuthold, E. 'Solidi leggieri da XXIII silique degli imperatori Maurizio Tiberio, Foca ed Eraclio', *R.I.N.*, lxii (1960), pp. 146-54.

Metcalf, D. M. 'The metrology of Justinian's follis', *N.C.*, 6th series, xx (1960), pp. 209-19.

Metcalf, D. M. 'Organization of the Constantinople mint for the follis of the Anastasian reforms', *N.C.*, 7th series, i (1961), pp. 131-43.

Metcalf, D. M. 'The Slavonic threat to Greece circa 580: some evidence from Athens', *Hesperia*, xxxi (1962), pp. 134-57.

Metcalf, D. M., and Payne, S. 'Some Byzantine and Arab-Byzantine coins obtained in Jerusalem', *N.Circ.*, lxxiii (1965), pp. 130-2, 185-6, 208-10, 255-8. [Coins of the sixth-seventh centuries.]

Prawdzic-Golemberski, E. J., and Metcalf, D. M. 'The circulation of Byzantine coins on the south-eastern frontiers of the Empire', *N.C.*, 7th series, iii (1963), pp. 83-92. [Copper coins of the sixth century bought in Baghdad which — it is argued — represent the currency of Egypt.]

Rachmani, L. Y. 'Two hoards of Byzantine coins and a Roman charm from Khirbet Deir Dassawi', *Israel Numismatic Journal*, ii (1964), pp. 19-23. [Sixth century folles, buried under Phocas; small gold hoard, mid sixth century.]

Ross, M. C. 'A Byzantine gold medallion at Dumbarton Oaks', *D.O. Papers*, xi (1957), pp. 247-61. [Of Maurice.]

Shaw, A. B. 'Byzantine folles of Anastasius I', *The Numismatist*, lxxvi (1963), pp. 159-69.

Turcan, R. 'Trésors monétaires trouvés à Tipasa: la circulation du bronze en Afrique romaine et vandale aux Ve et VI^e siècles ap. J.-C.', *Libya*, ix (1961), pp. 201-57.

Veglery, A., and Zacos, G. 'More about the bronze coinage of Maurice', *N.Circ.*, lxxviii (1960), pp. 258-61.

Whitting, P. D. 'Two suspected Byzantine forgeries', *N.C.*, 6th series, xviii (1958), pp. 177-8. [Of Justin I and Tiberius II.]

Zacos, G., and Veglery, A. 'Marriage solidi of the fifth century', *N.Circ.*, lxxviii (1960), pp. 73-4.

Zacos, G., and Veglery, A. 'An unknown solidus of Anastasios I', *N.Circ.*, lxxvii (1959), pp. 154-5. [Marriage solidus.]

III. PHOCAS — THEODOSIUS III (602-717)

Breckenridge, J. D. *The numismatic iconography of Justinian II (685-695, 705-711 A.D.)*. (*N.N.M.*, no. 144; New York, 1959.)

- Cumbo, A. 'Sull' esatta cronologia delle monete consolari di Eraclio', *Numismatica*, 2nd series, v (1964), pp. 199-203.
- Dikigoropoulos, A. I. 'A Byzantine hoard from Kharcha, Cyprus', *N.C.*, 6th series, xvi (1956), pp. 255-65. [Period of Constans II.]
- Golenko, K. V. 'Imitatsii solida VII v. iz Podneprov'ya', *V.V.*, 2nd series, xi (1956), pp. 292-4. [Light weight solidi of Constans II.]
- Grierson, P. 'A coin of the Emperor Phocas with the effigy of Maurice', *N.C.*, 7th series, iv (1964), pp. 247-50.
- Grierson, P. 'La cronologia della monetazione consolare di Eraclio', *Numismatica*, 2nd series, iv (1963), pp. 99-102.
- Grierson, P. 'Die alterations and imperial beards: a note on the early solidi of Constans II and Justinian II', *N.Circ.*, lxii (1962), pp. 159-60.
- Grierson, P. 'Solidi of Phocas and Heraclius: the chronological framework', *N.C.*, 6th series, xix (1959), pp. 131-54.
- Hrala, J. 'Byzantský solidus ze středních Čech', *Archeologické rozhledy*, xvi (1964), pp. 512-16. [Light-weight solidus of Heraclius found in Bohemia.]
- Kamera, M. I., and Golenko, K. V. 'Leninskii klad sasanidskikh i vizantiiskikh monet' (1956 g.), *V.V.*, 2nd series, xix (1961), pp. 172-93. [Seventh century silver hoard.]
- Kazamanova, L. N. 'Bartinskii klad vizantiiskikh serebryanykh monet VII veka', *Numismaticheskii Sbornik*, ii (Moscow, 1957), pp. 70-6. [Important silver hoard.]
- Metcalf, D. M. 'The Aegean coastlands under threat: some coins and coin hoards from the reign of Heraclius', *Annual of the British School at Athens*, lvii (1962), pp. 14-23.
- Nubar, H. 'Monede bizantine de la începutul secolului al VII-lea și sfârșitul cetății Histria', *S.C.N.*, iii (1960), pp. 183-95. [Coins of Phocas and Heraclius found at Histria.]
- Phillips, J. R. 'The Byzantine bronze coinage of Alexandria in the 7th century', *N.C.*, 7th series, ii (1962), 225-41.
- Voirol, A. 'Die ersten Darstellungen von Christus und von Maria auf byzantinischen Münzen', *Schweizer Münzblätter*, viii (1958), pp. 113-7. [Coinage of Justinian II and Leo VI.]
- Whititty, P. D. 'An Heraclius die identity', *N.Circ.*, lxxii (1964), p. 134.
- Whititty, P. D., 'Another Heraclius die identity', *N.Circ.*, lxxiii (1965), pp. 129-30.

IV. LEO III — MICHAEL III (717-867)

- Dikigoropoulos, A. I. 'The Constantinopolitan solidi of Theophilus', *D.O. Papers*, xviii (1964), pp. 353-61.
- Grierson, P. 'The miliaresion of Leo III', *N.Circ.*, lxxi (1963), p. 247.
- Metcalf, D. M. 'The Byzantine bronze coinage in the East Mediterranean world', *Congresso 1961*: ii, *Atti* (Rome, 1965), pp. 521-30.
- Metcalf, D. M. 'The new bronze coinage of Theophilus and the growth of the Balkan themes', *M.N.*, x (1962), pp. 81-98.
- Miles, G. C. 'Byzantine miliaresion and Arab dirhem: some notes on their relationship', *M.N.*, ix (1960), pp. 189-218.
- Morisani, O. 'Notula su astrattismo ed iconoclasmo nella monetazione bizantina', *Annali*, v-vi (1958-9), pp. 348-51.
- Novaca Lofaro, I. 'Monete auree de Leone V e Constantino', *Klearchos*, vii-viii (1960), pp. 76-80.
- Poullík, J. 'Byzantská misie ve Velké Moravě', *Časopis Národního Muzea*, cxxxii (1963), pp. 121-4. [Solidus of Michael III found in Moravia.]
- Sokolova, I. V. 'Les monnaies siciliennes du IX^e siècle des fouilles de Chersonèse', *Congresso 1961*: ii, *Atti* (Rome, 1965), pp. 565-70.
- Vegler, A., and Zacos, G. 'The miliaresion of Leo III', *N.Circ.*, lxxi (1963), pp. 162-164.
- Vegler, A., and Zacos, G. 'New light on the solidus of Leo IV', *N.Circ.*, lxix (1961), pp. 30-31.
- Vryonis, S. 'An Attic hoard of Byzantine gold coins (668-741) from the Thomas Whittemore Collection and the numismatic evidence for the urban history of Byzantium', *Mélanges G. Ostrogorsky*, i (= *Rec. des trav. de l'Institut d'Etudes byzantines*, viii; Belgrade, 1963), pp. 291-300.

V. BASIL I — NICEPHORUS III (867–1081)

Abramishvili, T. 'Klad monet iz Dviri', *V.V.*, 2nd series, xviii (1961), pp. 226–35. [Eleventh century, with list of Caucasian finds of Byzantine coins.]

Ahrweiler-Glykatzi, H. 'Nouvelle hypothèse sur le tétrartéron d'or et la politique monétaire de Nicéphore Phocas', *Mélanges G. Ostrogorsky*, i (= *Rec. des trav. de l'Institut d'Etudes byzantines*, viii; Belgrade, 1963), pp. 1–9.

Barnea I. 'Alt tezaur de monede bizantine de la Dinogetia', *S.C.N.*, iii (1960), pp. 245–254. [Eleventh century nomismata.]

Comşa, E., and Bichir, Gh. 'O nouă descoperire de monede și obiecte de podoaibă din secolele X–XI în aşezarea de la Garvăn (Dobrogea)', *S.C.N.*, iii (1960), pp. 223–44. [Tetrartera of Basil II.]

Dimian, I. 'Cu privire la cronologia și atribuirea monedelor anonime bizantine de bronz', *S.C.N.*, iii (1960), pp. 197–221.

Dölger, F. *Finanzgeschichtliches aus der byzantinischen Kaiserkanzlei des 11. Jahrhunderts. Zum Tetrarteron* (Munich, 1956). (Repr. in his *Paraspora* [Ettal, 1961], pp. 326–49.)

Ehrenkreutz, A. S. 'Byzantine tetartera and Islamic *dinārs*', *Journal of the Economic and Social History of the Orient*, vii (1964), pp. 183–90.

Fagerlie, J. M. 'A miliariesion of Romanus III and a nomisma of Michael IV', *M.N.*, xi (1961), pp. 227–36.

Gilevich, A. M. 'Novyi klad khersono-vizantiiskikh monet', *V.V.*, 2nd series, xxiv (1964), pp. 150–8.

Golenko, K. V. 'Monety iz raskopok Anakiopiiskoi kreposti v 1957–1958 gg.', *V.V.*, 2nd series, xxiv (1964), pp. 159–65. [A few Byzantine folles and one miliariesion of the 10th–11th cent.]

Golenko, K. V. 'Novye materialy k izucheniyu Tamanskikh podrazhenii vizantiiskim monetam', *V.V.*, 2nd series, xviii (1961), pp. 216–25. [Imitations of miliariesia of Basil II.]

Golenko, K. V. 'Vizantiiskie monety X v. iz nakhodki v g. Stanislave (Khersonskaya oblast)', *Sovetskaya Arkheologiya*, iii (1961), pp. 290–1. [Two solidi of Constantine VII.]

Grierson, P. 'A misattributed miliariesion of Basil II', *Mélanges G. Ostrogorsky*, i (= *Rec. des trav. de l'Institut d'Etudes byzantines*, viii; Belgrade, 1963), pp. 111–16.

Grierson, P. 'Notes on the fineness of the Byzantine solidus', *B.Z.*, liv (1961), pp. 91–97.

Kropotkin, V. V. 'Vizantiiskie monety iz Tamatarkhi-Tmutarakani', in *Keramika i steklo drevnei Tmutarakani*, ed. B. A. Rybakov (Moscow, 1963), pp. 175–85.

Laurent, V. 'L'argument iconographique et les noms de monnaies. À propos du *senzaton*', *Revue des études byzantines*, xiv (1956), pp. 205–7.

Leuthold, E. 'Tesoretto di monete bizantine dei secoli IX e X nel Museo Nazionale di Taranto', *R.I.N.*, lviii (1956), pp. 31–35.

Metcalf, D. M. 'Provincial issues among the Byzantine bronze coinage of the 11th century', *H.B.N.*, xv (1961), pp. 25–32.

Metcalf, D. M. 'Bronze coinage and city life in Central Greece circa A.D. 1000', *Annual of the British School at Athens*, lx (1960), pp. 1–40.

Sokolova, I. V. 'Khersonesskie monety X v. s portretami imperatorov', *Numizmatika i epigrafika*, v (1965), pp. 116–20.

Sokolova, I. V. 'Sebryanyi monetnyi chekan Konstantina VII', *Numizmatika i epigrafika*, ii (Moscow, 1960), pp. 57–60.

Sokolova, I. V. 'O tekhnike izgotovleniya shtempelei dlya chekanki vizantiiskikh monet', *Soobshcheniya Gosudarstvennogo Ermitazha*, xv (1959), pp. 46–49.

Sokolova, I. V. 'Vizantiiskie monety klada Vella', *Trudy Gosudarstvennogo Ermitazha*, iv (1961), pp. 10–22. [Miliariesia of Basil II.]

Vegler, A., and Zacos, G. 'A unique silver coin of Constantine VII', *N.Circ.*, lxiv (1956), coll. 379–80.

Vegler, A., and Zacos, G. 'More about the silver coin of Constantine VII', *N.Circ.*, lxv (1957), coll. 195–6.

Zacos, G., and Vegler, A. 'C for E on coins of the 11th century', *N.Circ.*, lxviii (1960), pp. 154–7.

VI. ALEXIUS I — ALEXIUS V (1081-1204)

- Abramishvili, T. Ya. 'Nakhodka vizantiiskikh zolotykh monet v Gurdzhaani', *V.V.*, 2nd series, xiii (1958), pp. 282-5. [Hyperpera of Alexius I and John II.]
- Balling, J. 'A Byzantine double hoard from Lindos', *Nordisk Numismatisk Arsskrift*, 1963, pp. 13-41. [Twelfth century.]
- Băncilă, I. 'Note asupra unor tezaure de monede bizantine', *S.C.N.*, i (1957), 425-38 [Comnenid coins.]
- Bellinger, A. R. 'Three hoards of Byzantine bronze coins', *Greek and Byzantine Studies*, i (1958), pp. 163-71.
- Bellinger, A. R. 'Three more hoards of Byzantine copper coins', *M.N.*, xi (1964), pp. 207-26.
- Bellinger, A. R., and Metcalf, D. M. 'A hoard of scyphate bronze coins from Arcadia', *N.C.*, 6th series, xix (1959), pp. 155-64.
- Bertelè, T. 'La Vergine Aghiosoritissa nella numismatica bizantina', *Mélanges S. Salaville* (= *Rev. des Etudes byzantines*, xvi; 1958), pp. 233-4.
- Gerasimov, T. 'Une fausse monnaie d'argent byzantine', *Bull. de l'Inst. d'Archéologie*, xxviii (1965), pp. 261-3. [Modern forgery of a coin of Andronicus I.]
- Iliescu, O. 'Despre un tezaur de monede bizantine din vremea Comnenilor, găsit în București', *S.C.N.*, iii (1960), pp. 493-5.
- Laurent, V. 'Le "Juste Poids" de l'hyperperon trachy', *Congrès international de Numismatique, Paris, 1953*. Vol. ii, *Actes* (Paris, 1957), pp. 299-307.
- Manuel de Guadan, A. 'Nomisma d'argento di Isacco II Angelo e le coniazioni di Teodoro Ducas Mankaphas', *Italia Numismatica*, xi (1960), pp. 117-20.
- Metcalf, D. M. 'The reformed gold coinage of Alexius I Comnenus', *H.B.N.*, xvi (1962), pp. 271-84.
- Metcalf, D. M. 'John Vatatzes and John Comnenus. Questions of style and detail in Byzantine numismatics', *Greek, Roman and Byzantine Studies*, iii (1960), pp. 203-214.
- Metcalf, D. M. 'The Brauron hoard and the petty currency of Central Greece, 1143-1204', *N.C.*, 7th series, iv (1964), pp. 251-9.
- Metcalf, D. M. 'Byzantine scyphate bronze coinage in Greece', *Annual of the British School at Athens*, lvi (1961), pp. 42-63.
- Mitreă, B. 'Un mic tezaur de monede bizantine de bronz din secolele XII-XIII', *S.C.N.*, iii (1960), pp. 497-9. [Coins of Isaac II and Alexius III.]
- Svoronos, N. G. 'Recherches sur le cadastre byzantin et la fiscalité aux XIe et XIIe siècles: le cadastre de Thèbes', *Bull. de correspond. hellénique*, lxxxiii (1959), pp. 1-145, 800, 805-25. [Very important discussion of the new values of Alexius I's reforms.]

VII. THEODORE I LASCARIS — CONSTANTINE XI (1204-1453)

- Bellinger, A. R. 'A hoard of silver coins of the Empire of Nicaea', *Centennial Publication of the American Numismatic Society*, ed. H. Ingholt (New York, 1958), pp. 73-81.
- Bertelè, T. 'L'iperpero bizantino dal 1261 al 1453', *R.I.N.*, lix (1957), pp. 70-89.
- Bertelè, T. 'Autocratori dei Romani, di Constantinopoli e della Macedonia', *Numismatica*, 2nd series, ii (1961), pp. 75-82.
- Bertelè, T. 'Monete dell'imperatore Giovanni VI Cantacuzeno', *Mélanges G. Ostrogorsky*, i (= *Rec. des trav. de l'Institut d'Etudes byzantines*, viii; Belgrade, 1963), pp. 43-59.
- Bertelè, T. 'Appunto sulle monete del *Rechenbuch* edito da Hunger-Vogel', *B.Z.*, lvi (1963), pp. 321-7.
- Brunetti, L. 'Sulla quantità di monete d'argento emesse sotto Anna di Savoia, imperatrice di Bisanzio (1341-1347)', *R.I.N.*, lxxv (1963), pp. 143-68.
- Cutler, A. 'The stavraton: evidence for an elusive coin type', *M.N.*, xi (1964), pp. 237-44.
- Dimitrijević, S. 'La monnaie commune des empereurs Jean V Paléologue et Jean VI

Cantacuzène', *Mélanges G. Ostrogorsky*, ii (= *Rec. des trav. de l'Institut d'Etudes byzantines*, viii; Belgrade, 1964), pp. 47-52.

Gerasimov, T. 'Contribution à l'étude de la numismatique de l'Empire byzantin de Salonique', *Studia in honorem M. S. Drinov* (Sofia, 1960), pp. 381-98.

Gerasimov, T. 'Deux monnaies d'argent de Jean V Paléologue', *Bull. de l'Institut d'Archéologie*, xxviii (Sofia, 1965), pp. 259-61.

Gerasimov, T. 'Les hyperpères d'Andronic II et d'Andronic III et leur circulation en Bulgarie', *Byzantinobulgaria*, i (1962), pp. 213-36.

Gerasimov, T. 'Monnaies d'Andronic II avec Andronic III, Manuel II et Andronic IV Paléologue', *Bull. de l'Institut d'Archéologie*, xxiii (Sofia, 1959), pp. 336-8.

Gerasimov, T. 'Monnaies d'argent d'Andronic II Paléologue avec la légende ΠΟΛΙΤΙΚΟΝ', *Bull. de l'Institut d'Archéologie*, xxviii (1965), pp. 257-8.

Gerasimov, T. 'Les monnaies de Jean VII Paléologue (1400-1408)', *Byzantinoslavica*, xvii (1956), pp. 114-9.

Golenko, K. V. 'Klad monet iz sela Tobanieri', *V.V.*, 2nd series, xvi (1959), pp. 127-72. [Coins of Trebizond and Georgia.]

Iliescu, O. 'Le dernier hyperpère de l'empire byzantin de Nicée', *Byzantinoslavica*, xxv (1965), pp. 94-99.

Laurent, V. 'L'emblème du lis dans la numismatique byzantine: son origine. À propos d'une monnaie inédite de Michel VIII Paléologue', *Centennial Publication of the American Numismatic Society*, ed. H. Ingholt (New York, 1958), pp. 417-27.

Laurent, V. 'Les Vêpres siciliennes et la dévaluation de l'hyperpère', *Χριστιανικὴς Ἀναστροφής* K. Ορλάνδου (Athens, 1964), pp. 36-45.

Longuet, H. 'Une trouvaille de monnaies des Paléologues', *R.B.N.*, cvi (1960), pp. 243-66.

Manuel de Guadan, A. 'La "democracia" en la época de Teodoro II Lascaris (1254-1258)', *Publications de l'Institut d'Etudes orientales de la Bibliothèque patriarcale d'Alexandrie*, xi (1962), pp. 29-50.

Veglery, A., and Zacos, G. 'The coins of Andronikos II with the inscription "Emperors of the Romans"', *N.Circ.*, lxix (1961), pp. 134-6, 159-62.

Veglery, A., and Zacos, G. 'Silver coins of Andronikos II and Andronikos III', *N.Circ.*, lxx (1962), pp. 76-80.